

# **Different Slopes for Different Folks: Self-Esteem Instability and Gender as Moderators of the Relationship between Self-Esteem and Attitudinal Aggression**

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*The present research examined the relationships among self-esteem level, temporal self-esteem instability, gender, and self-reported aggression. Self-esteem level was negatively related to attitudinal aggression, although this relationship varied as a joint function of self-esteem instability and gender. It was strongest among men with unstable self-esteem and among women with stable self-esteem. Although self-esteem instability and narcissism (Study 3) were each positively related to behavioral aggression, the relationship between narcissism and attitudinal aggression varied as a function of self-esteem instability. The relationship between narcissism and attitudinal aggression was positive among people with stable self-esteem, but negative among people with unstable self-esteem, regardless of gender. The importance of considering gender, self-esteem instability, and narcissism in the self-esteem/aggression debate is discussed.*

The nature of the relationship between self-esteem (SE) and aggression is a contentious one that has been debated in the media (Begley, 1998; Goode, 2002; Slater, 2002), public policy (California Task Force to Promote Self-Esteem and Personal and Social Responsibility, 1990), and the psychological literature

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(Baumeister, Bushman, & Campbell, 2000; Baumeister, Campbell, Krueger, & Vohs, 2003; Donnellan, Trzesniewski, Robins, Moffitt, & Caspi, 2005). Baumeister and colleagues (Baumeister et al., 2000, 2003; Baumeister, Smart, & Boden, 1996) have suggested that, although artificially inflated high SE may be associated with aggression, it is actually a related measure—*narcissism*—that is most directly related to aggression. In contrast, other research has found a negative relationship between SE and aggression (Donnellan et al., 2005; Webster, 2006) as well as between SE and delinquency (Rosenberg, Schooler, & Schoenbach, 1989) and criminal convictions (Trzesniewski, Donnellan, Moffitt, Robins, Poulton, & Caspi, 2006). Laboratory aggression experiments have found global SE to be either unrelated (Bushman & Baumeister, 1998; Kirkpatrick, Waugh, Valencia, & Webster, 2002; Twenge & Campbell, 2003) or negatively related (Webster & Kirkpatrick, 2006) to behavioral aggression.

Aside from the possibility that artificially high SE (i.e., narcissism) is associated with aggression, there is broad support for the fact that SE and aggression are negatively related. One way to interpret such a relationship is to conceptualize low SE as a “risk factor” for expressing aggressive behaviors or holding aggressive attitudes or beliefs. Individuals with low SE may be at an increased risk for aggression because they may lack the resilient self-views that might otherwise stymie or buffer an aggressive response to negative feedback. Although such a possibility is consistent with the results of correlational research, it is possible that these results are confounded by some sort of “third variable” problem in terms of situational influences. People with low SE may be more likely to find themselves (for whatever reasons) in situations that elicit aggression more often than people high in SE. Nevertheless, negative relationships between SE and aggression have been found in laboratory studies (e.g., Webster & Kirkpatrick, 2006), in which the nature and strength of aggression-eliciting stimuli are held constant. The results of these laboratory experiments suggest that the relationships found in non-manipulative, correlational research reflect the negative relationships between SE and various aggression-related behaviors.

Another aspect of SE that appears to be related to aggression is *instability*—that is, the extent to which an individual’s SE varies across time and situation. Much of the research on the instability of SE has been done by Kernis and colleagues (e.g., Kernis, Cornell, Sun, Berry, & Harlow, 1993). Broadly speaking, this research suggests that SE instability is a trait-like characteristic that is negatively related to, but distinct from, level of SE (correlations range from  $-.1$  to  $-.5$ ; see also Neiss, Sedikides, & Stevenson, 2006). Moreover, SE instability has been found to be negatively related to various measures of well-being, relationships that are frequently qualified by interactions with level of SE (Gable & Nezlek, 1998). Such negative relationships tend to be stronger for people with low levels of SE than for those with high SE.

In a study related to aggression, Kernis, Grannemann, and Barclay (1989) had 21 men and 24 women provide trait measures of anger, hostility, and trait SE, and provide state SE measures over the course of a week to assess SE instability. Two patterns emerged across multiple measures of anger and hostility. First, overall, SE instability was positively related to anger and hostility; however, for two anger measures, namely, the Novaco Anger Inventory (Novaco, 1975) and the Trait Anger Scale (Spielberger, Jacobs, Russell, & Crane, 1983), this effect was qualified by SE level. For the Trait Anger Scale, for people with unstable SE, the relationships between SE level and anger were positive, whereas for people with stable SE, relationships between SE level and anger were negative; these divergent relationships

were equally strong. The Novaco Anger Inventory, however, produced more of a “spreading” interaction, such that, for people with unstable SE, the relationships between SE level and anger were nearly flat, whereas for people with stable SE, relationships between SE level and anger were clearly negative.<sup>1</sup> From a risk-factor standpoint, for the Novaco Anger Inventory in particular, possessing either low SE level or high SE instability was related to increased anger. Thus, these results suggest that unstable SE may also be a risk factor for expressing anger, and hence, possibly, aggression. SE instability may act as a catalyst for increased anger and aggression, since SE instability may be a proxy measure for high reactivity to negative feedback, unsure self-views, or both. It is important to note that, to our knowledge, the Kernis et al. (1989) study is the only study that has examined relationships among SE level, SE instability, and anger–hostility.

Although the present body of research on relationships between SE and aggression is informative, we thought there was an important absence: the role that gender might play in such relationships. Gender may be particularly important to understanding the relationship between SE and aggression. Meta-analyses have revealed that men tend to report higher SE ( $d=0.2$ ; Kling, Hyde, Showers, & Buswell, 1999) and display more behavioral aggression ( $d=0.3$ ; Eagly & Steffen, 1986) than women. Recent research has suggested that controlling for gender can clarify relationships among SE, narcissism, and aggression. For example, the negative relationship between SE level and verbal aggression was shown to be stronger for men than for women (Webster, 2006). Such gender differences in aggression are not uncommon, especially in the developmental literature, which has shown that boys tend to engage in more *overt* aggression (e.g., physical and verbal aggression), whereas girls engage in more *relational* aggression (e.g., manipulation or social exclusion of peers; Crick & Grotpeter, 1995). In this regard, we note that Kernis et al. (1989) reported that gender did not moderate the effects of SE level and SE instability, but they did not report whether gender moderated the key SE level  $\times$  SE instability interaction. Even if we assume that the failure to describe the test of this moderating effect was due to the fact that it was not significant, recall that Kernis et al. had only 21 men and 24 women in their study, hardly enough to provide adequate power to detect such an interaction or the simpler interactions. For example, a study with a sample size this small would have only about a 10% chance of detecting a small effect ( $r=.1$ ), given one actually existed.

The present studies were guided by what we call a “threshold” model of expressing aggression (see also Marshall & Brown, 2006). We assume that individuals will vary in the extent to which they express aggression, either attitudinally or behaviorally. In terms of the level and instability of SE, we expected that men who had either low SE or unstable SE would be more aggressive than men with high, stable SE. In contrast, for women, we expected that women with both low and unstable SE would be more aggressive than others. For men, low SE and unstable SE are *sufficient* for aggression, whereas for women, low SE and unstable SE are *necessary* for aggression. In addition, we thought it would be useful to understand the combined roles of SE level, SE instability, and gender in establishing or maintaining such thresholds. Overall, we believed that both low SE and unstable SE would be risk factors for being aggressive or thinking aggressively; however, given gender differences in aggression, we believed that these two factors would contribute differentially to the expression of aggression in men and women.

More specifically, we thought that it would take fewer risk factors for men to be aggressive than it would for women. That is, for men, aggression is more socially

acceptable than it is for women, and sex differences in aggression may have some evolutionary basis (Campbell, 2005). Indeed, even within gender, men who reported more hypermasculinity had lower aggression thresholds in a laboratory experiment than men who reported less hypermasculinity (Parrot & Zeichner, 2003). In addition, according to Kling et al. (1999), women's SE level may be based more on an *interdependent* self-construal (where others are considered part of the self; cf. Cross & Madson, 1997; Josephs, Markus, & Tafarodi, 1992), whereas men's SE level may be based more on an *independent* self-construal (where others are considered separate from the self). Supporting this view, women's SE level may be more reactive to day-to-day interpersonal evaluative feedback than men's (Roberts, 1991). Thus, women who have the combination of *both* unstable SE *and* low SE level may be particularly susceptible to aggressive responses, whereas for men, possessing *either* of the traditional risk factors of low SE level *or* high SE instability may alone trigger an aggressive response.

We predict that, among men (who have on average a lower threshold for aggression than women), either low SE level or high SE instability will be risk factors for aggression. In contrast, we predict that, among women (who have on average a higher threshold for aggression than men), the conjoint presence of both low SE and high SE instability will be risk factors for aggression. Statistically, these predictions translate into a three-way interaction of SE level, SE instability, and gender, such that the simple interaction of SE level and SE instability will be different for each gender. First, we predict a spreading interaction among men, such that the *least* aggressive men will possess high, stable SE. Thus, the simple effect of SE level on aggression should be negative among men with stable SE, but practically nonexistent among men with unstable SE, who we expect to be relatively aggressive regardless of their SE level. Second, we predict a different spreading interaction among women, such that the *most* aggressive women will possess low, unstable SE. Thus, the simple effect of SE level on aggression should be negative among women with unstable SE, but practically nonexistent among women with stable SE. We expect the latter group to be relatively non-aggressive regardless of their SE level.

### *Overview of the Present Research*

In three studies, participants provided trait measures of aggression, SE level, and daily (or, in Study 3, semi-daily) measures of state SE (to assess SE instability) using an Internet website. In each study, we found a significant three-way interaction between SE level, SE instability, and participant gender. This was consistently true for self-reported *attitudinal* aggression (i.e., anger and hostility), but not *behavioral* aggression (i.e., verbal and physical aggression), which was positively related to SE instability in Studies 1 and 2. In Study 3, we addressed the relationship between narcissism and aggression, and assessed the extent to which it was moderated by SE instability and gender. Finally, we report the results of an aggregate analysis that includes data from all three studies.

## **Study 1**

Kernis et al.'s (1989) pioneering study of SE instability and anger–hostility is the only one of its kind of which we are aware, and although its influential findings have been cited over 100 times, it is based on a modest sample of only 45 undergraduates. In Study 1, we sought to replicate Kernis et al.'s (1989) study using a larger sample

and also to extend it by testing our predicted SE level  $\times$  SE instability  $\times$  gender interaction.

### Method

*Participants.* Participants were 100 introductory psychology students who received credit for their participation (23 men, 77 women;  $M_{\text{age}} = 20.03$  years,  $SD = 1.16$ ).

*Measures.* Trait SE level was measured using Rosenberg's (1965) 10-item Self-Esteem Scale, which employed 5-point response scales from 1 (*strongly disagree*) to 5 (*strongly agree*). Daily SE was measured with four items from Rosenberg's Self-Esteem Scale reworded to assess daily self-feelings ("Today, on the whole, I was satisfied with myself"; cf. Nezlek & Plesko, 2001).<sup>2</sup> These items used a response scale from 1 (*strongly disagree*) to 7 (*strongly agree*).

Aggression was measured using an abridged, 12-item version of Buss and Perry's (1992) 29-item Aggression Questionnaire (AQ) that was modified for the present study by taking the three items with the highest factor loadings from each of the AQ's four subscales outlined by Buss and Perry: Physical Aggression ("Given enough provocation, I may hit another person"); Verbal Aggression ("I tell my friends openly when I disagree with them"); Anger ("I have trouble controlling my temper"); and Hostility ("Other people always seem to get the breaks"). Participants used a response scale ranging from 1 (*strongly disagree*) to 9 (*strongly agree*). In Kernis et al.'s (1989) study, the Buss–Durkee (1957) Hostility Inventory (BDHI)—the predecessor of the AQ—was divided into Attitudinal and Motor components (cf. Bushman, Cooper, & Lemke, 1991). In the present studies, a similar distinction was made using the AQ by computing an attitudinal component, "AQA" (Anger and Hostility subscales), and a behavioral component, "AQB" (Verbal and Physical Aggression subscales). Like Kernis et al. (1989), we made no a priori predictions about whether attitudinal or behavioral aggression might be more affected by our predicted three-way interaction between SE level, SE instability, and gender.

*Procedure.* Participants first completed the 12-item AQ and the trait measure of SE level. They then provided daily responses to the four SE items via an Internet website each night prior to bedtime for three weeks. In the present studies, participants' daily responses were time-stamped to ensure their compliance with the daily schedule. In Study 1, compliance was good: The median number of days for which participants provided data was 17 out of 21 days ( $M = 15.78$ ,  $SD = 3.48$ , minimum = 6 days). Data were missing at random rather than systematically. Following procedures outlined by Kernis et al. (1993), temporal SE instability was calculated by taking the standard deviation across each participant's state SE means from days that data were provided.

### Results

The descriptive statistics for this and subsequent studies are displayed in Table 1. For Study 1, the AQA and AQB were positively correlated,  $r(98) = .38$ ,  $p < .01$ .

Each of the two AQ components was regressed onto participant gender (coded women =  $-1$ , men =  $1$ ), trait SE level, and temporal SE instability (both mean-centered), and all linear higher-order interactions involving these independent variables. This base regression model was also used in Studies 2 and 3.

Analyses of the AQB showed that men reported higher scores ( $M = 5.39$ ) than women,  $M = 4.38$ ;  $\beta = .28$ ,  $t(92) = 2.66$ ,  $p < .01$ ,  $pr^2 = .07$ . Replicating results from Kernis et al. (1989), SE instability was positively related to the AQB,  $\beta = .28$ ,  $t(92) = 2.21$ ,  $p = .03$ ,  $pr^2 = .05$ . All other effects for the AQB were non-significant ( $ps > .30$ ).

Analyses of the AQA revealed several significant effects, which are shown in Table 2; predicted means are shown in Table 3. Trait SE level was negatively related to the AQA, replicating Kernis et al.'s (1989) finding with BDHI Attitude. Temporal SE instability was positively related to the AQA. A marginal gender  $\times$  SE instability interaction also emerged. These effects were qualified by a significant gender  $\times$  SE level  $\times$  SE instability interaction, which was decomposed by examining the SE level  $\times$  SE instability interactions within each gender (following procedures outlined by Judd & McClelland, 1989).

Among women, SE level was negatively related to the AQA,  $\beta = -.41$ ,  $t(92) = -3.36$ ,  $p < .01$ ,  $pr^2 = .11$ . Although this effect was not significantly qualified by an

**TABLE 1** Descriptive Statistics for Variables in Studies 1, 2, and 3

Variable	Study 1 ( $N = 100$ )			Study 2 ( $N = 89$ )			Study 3 ( $N = 105$ )		
	Mean	SD	$\alpha$	Mean	SD	$\alpha$	Mean	SD	$\alpha$
SE instability <sup>a</sup>	0.76	0.44	—	0.73	0.38	—	0.63	0.41	—
SE level	4.16	0.63	.90	4.03	0.68	.89	3.94	0.61	.87
AQA	3.75	1.30	.76	2.44	0.71	.73	2.30	0.69	.88
AQB	4.60	1.51	.75	2.91	0.83	.80	2.45	0.76	.88
BDHI Attitude	—	—	—	—	—	—	5.20	3.48	.75
BDHI Motor	—	—	—	—	—	—	19.31	7.76	.87
Narcissism	—	—	—	—	—	—	15.62	8.16	.89

*Note:* SE = Self-esteem; AQA = Aggression Questionnaire Attitude; AQB = Aggression Questionnaire Behavior; BDHI = Buss–Durkee Hostility Inventory. <sup>a</sup>Temporal SE instability was defined as the standard deviation across each participant's daily SE means (or semi-daily SE means in Study 3).

**TABLE 2** Regression Statistics for Studies 1 and 2: Self-Reports of Attitudinal Aggression (AQA) as a Function of Participant Gender, and Self-Esteem Level, and Self-Esteem Instability

Variable	Study 1			Study 2		
	$\beta$	$t(92)$	$pr^2$	$\beta$	$t(81)$	$pr^2$
Gender of participant	.02	0.27	.00	.25	2.37*	.06
Level of self-esteem	-.26	-2.40*	.06	-.33	-3.06**	.10
Instability of self-esteem	.37	3.40**	.11	.10	0.87	.01
Level $\times$ instability	.08	0.78	.01	.04	0.39	.00
Gender $\times$ level	.15	1.34	.02	-.02	-0.19	.00
Gender $\times$ instability	.20	1.89 <sup>†</sup>	.04	.02	0.21	.00
Gender $\times$ level $\times$ instability	.22	2.09*	.05	.33	3.02**	.10

<sup>†</sup> $p \leq .06$ ; \* $p < .05$ ; \*\* $p < .01$ .

**TABLE 3** Predicted Attitudinal Aggression Means for Studies 1, 2, and 3, as a Function of Participant Gender, Self-Esteem Level, and Self-Esteem Instability

SE instability	Self-Esteem level			
	Women		Men	
	Low	High	Low	High
Study 1: AQA ( $N = 100$ )				
Stable	3.93	3.16	<b>3.56</b>	<b>2.62</b>
Unstable	<b>4.64</b>	<b>3.29</b>	4.40	4.73
Study 2: AQA ( $N = 89$ )				
Stable	2.26	2.19	<b>3.03</b>	<b>2.06</b>
Unstable	<b>2.73</b>	<b>1.93</b>	2.73	2.70
Study 3: AQA ( $N = 105$ )				
Stable	2.50	2.38	<b>2.68</b>	<b>1.94</b>
Unstable	<b>2.44</b>	<b>1.85</b>	2.55	2.22
Study 3: BDHI Attitude ( $N = 105$ )				
Stable	4.51	6.09	<b>6.17</b>	<b>3.84</b>
Unstable	<b>5.78</b>	<b>3.68</b>	6.56	5.03
Aggregate of Studies 1, 2, and 3: AQA ( $z$ scores; $N = 294$ )				
Stable	0.08	-0.31*	<b>0.44*</b>	<b>-0.58*</b>
Unstable	<b>0.46*</b>	<b>-0.48*</b>	0.40*	0.13

*Note:* SE = Self-esteem; AQA = Aggression Questionnaire Attitude; BDHI = Buss–Durkee Hostility Inventory. The words “High” and “Unstable,” and “Low” and “Stable” denote scores at 1 *SD* above and below the mean (respectively) on SE level or SE instability. Adjacent cells in **boldface** indicate negative simple relationships between SE level and aggressive attitudes, within gender and SE instability. For the aggregate means, an asterisk indicates the number differs significantly ( $p < .05$ ) from the mean response of zero.

interaction with SE instability,  $\beta = -.14$ ,  $t(92) = -1.19$ ,  $p = .24$ ,  $pr^2 = .02$ , simple effects revealed that, among women with stable SE (i.e., 1 *SD* below the mean SE instability score), SE level was at best marginally related to the AQA,  $\beta = -.30$ ,  $t(92) = -1.58$ ,  $p = .12$ ,  $pr^2 = .03$ , whereas among women with unstable SE (i.e., 1 *SD* above the mean SE instability score), SE level was significantly, negatively related to the AQA,  $\beta = -.52$ ,  $t(92) = -4.88$ ,  $p < .01$ ,  $pr^2 = .21$ .

Among men, SE instability was positively related to the AQA,  $\beta = .57$ ,  $t(92) = 3.01$ ,  $p < .01$ ,  $pr^2 = .09$ . This effect was qualified by a marginal interaction with SE level,  $\beta = .30$ ,  $t(81) = 1.72$ ,  $p = .09$ ,  $pr^2 = .03$ . Among men with stable SE, the simple relationship between SE level and the AQA was negative, but only marginally significant at best,  $\beta = -.36$ ,  $t(92) = -1.51$ ,  $p = .13$ ,  $pr^2 = .02$ , whereas among men with unstable SE, this relationship was positive, but clearly non-significant,  $\beta = .13$ ,  $t(92) = 0.57$ ,  $p = .57$ ,  $pr^2 = .00$ .

### Discussion

Replicating Kernis et al.’s (1989) finding, SE instability was positively related to self-reports of aggression. In contrast to Kernis et al. (1989), we found no support for a simple SE level  $\times$  SE instability interaction. Instead, this interaction was qualified by

a three-way interaction with gender, but only for attitudinal aggression. Based on the extant literature on gender differences in aggression and our predictions of differential thresholds for aggression, we expected that this three-way interaction would reveal a negative SE–aggression relationship, but especially among men with stable SE and women with unstable SE. While such a negative simple relationship between SE level and attitudinal aggression was significant for women with unstable SE, it was not significant for men with stable SE. We speculate, however, that the absence of such an effect for men with stable SE may have been due to a relative lack of statistical power, since our sample consisted of only 23 men compared to 77 women. In Study 2, we were able to obtain an equal number of men and women while doubling the sample size of men compared to Study 1. It is noteworthy, however, that the observed pattern of means in Study 1 was consistent with the within-gender spreading interactions we had envisioned: Women with unstable, low SE reported the most attitudinal aggression, whereas men with stable, high SE reported the least aggression.

## Study 2

### *Method*

*Participants.* Participants were 89 introductory psychology students who received credit for their participation (45 men, 44 women;  $M_{\text{age}} = 18.79$  years,  $SD = 0.91$ ).

*Measures and procedure.* The measures and procedure of Study 2 were the same as Study 1 with three exceptions: Three items (rather than four) were used to measure daily SE level, the 12-item AQ's response scale ranged from 1 (*strongly disagree*) to 5 (*strongly agree*), and the duration of the daily SE measures was two weeks (instead of three). Compliance with the daily schedule was good: The median number of days for which participants provided data was 11 out of 14 days ( $M = 11.33$ ,  $SD = 1.77$ , minimum = 5 days).

### *Results*

The AQA and AQB scales were positively correlated,  $r(87) = .38$ ,  $p < .01$ . As in Study 1, each of the two AQ components was regressed onto participant gender (coded women =  $-1$ , men =  $1$ ), trait SE level, and temporal SE instability (both mean-centered), and all linear higher-order interactions involving these independent variables.

Analyses of AQB scores revealed that men reported more aggression ( $M = 3.16$ ) than women ( $M = 2.54$ ),  $\beta = .38$ ,  $t(81) = 3.48$ ,  $p < .01$ ,  $pr^2 = .13$ . SE instability was positively related to the AQB,  $\beta = .24$ ,  $t(81) = 2.13$ ,  $p = .04$ ,  $pr^2 = .05$ . No other effects were significant for the AQB ( $ps > .10$ ).

Analyses of the AQA produced several findings of interest; the base model appears in Table 2, whereas predicted means are shown in Table 3. Men reported more aggressive attitudes ( $M = 2.63$ ) than women ( $M = 2.28$ ). SE level was negatively related to the AQA, replicating the results Kernis et al. (1989) obtained with BDHI Attitude. These effects were qualified by a significant gender  $\times$  SE level  $\times$  SE instability interaction.



Among women, SE level was negatively related to the AQA,  $\beta = -.31$ ,  $t(81) = -2.01$ ,  $p < .05$ ,  $pr^2 = .05$ , which was qualified by an interaction with SE instability,  $\beta = -.26$ ,  $t(81) = -2.06$ ,  $p = .04$ ,  $pr^2 = .05$ . Among women with stable SE, SE level was not related to the AQA,  $\beta = -.05$ ,  $t(81) = -0.25$ ,  $p = .81$ ,  $pr^2 = .00$ , whereas among women with unstable SE, SE level was negatively related to the AQA,  $\beta = -.57$ ,  $t(81) = -2.98$ ,  $p < .01$ ,  $pr^2 = .10$ .

Among men, SE level was negatively related to the AQA,  $\beta = -.35$ ,  $t(81) = -2.32$ ,  $p = .02$ ,  $pr^2 = .06$ . This relationship was qualified by an interaction with SE instability,  $\beta = .34$ ,  $t(81) = 2.21$ ,  $p = .03$ ,  $pr^2 = .06$ , but in a direction opposite to that for women. Tests of simple effects revealed that, among men with stable SE, SE level was negatively related to the AQA,  $\beta = -.69$ ,  $t(81) = -3.06$ ,  $p < .01$ ,  $pr^2 = .10$ , whereas among men with unstable SE, SE level was not related to the AQA,  $\beta = -.02$ ,  $t(81) = -0.08$ ,  $p = .94$ ,  $pr^2 = .00$ .

### Discussion

Replicating Kernis et al. (1989) and Study 1, SE instability was positively related to self-reports of behavioral aggression. Although no support for a simple SE level  $\times$  SE instability interaction was found, this interaction was again significantly moderated by gender for reports of attitudinal aggression. Following the predicted pattern, the negative relationship between SE and attitudinal aggression was the strongest among men with stable SE and women with unstable SE. In contrast to Study 1, the simple effect for men with unstable SE was significant in Study 2. We suspect that this between-study discrepancy can be explained by differences in statistical power, since Study 2 had more power to detect significant effects among men than did Study 1.

These findings were again consistent with the predicted within-gender spreading interactions: Women with unstable, low SE reported the most attitudinal aggression, whereas men with stable, high SE reported the least. Thus, among men, possessing either low SE level or higher SE instability was related to increased aggressive attitudes, whereas among women, conjointly possessing both low SE level and high SE instability was related to the same. Collectively, Studies 1 and 2 produced comparable results, and supported our prediction of a gender difference in the SE level  $\times$  SE instability interaction.

### Study 3

Although the results of Studies 1 and 2 were similar, the generalizability of the results may have been limited because both studies used similar abbreviated measures for state SE and trait aggression. In Study 3, we used all 10 items from Rosenberg's (1965) Self-Esteem Scale for state SE assessment and used all 29 items from the AQ to measure aggression. Additionally, we included the AQ's predecessor, the BDHI, which was a dependent variable in the original Kernis et al. (1989) study.

We also chose to include a measure related to SE that is commonly encountered in the aggression literature: *narcissism*. For instance, Bushman and Baumeister (1998) have found that narcissism—which they argue represents an unstable or unjustifiably inflated form of SE (see also Rhodewalt, Madrian, & Cheney, 1998)—was positively related to behavioral aggression in laboratory experiments, especially when participants received a threat to the self. In their view, narcissism has motivational and affective components that SE lacks; “High self-esteem means thinking well of oneself, whereas narcissism means involves *passionately wanting* to think well of

oneself” (emphasis added; Bushman & Baumeister, 1998, p. 228). Collectively, laboratory aggression experiments have shown narcissism to be either positively related (Bushman & Baumeister, 1998; Twenge & Campbell, 2003) or inconsistently related (Kirkpatrick et al., 2002) to behavioral aggression. In a series of correlational studies, Donnellan et al. (2005) found that SE and narcissism were negatively and positively related (respectively) to self-reports of aggression (see also Webster, 2006).

The purpose of Study 3 was thus two-fold. First, we sought to replicate the three-way interaction of SE level, SE instability, and gender for attitudinal aggression using a more reliable and varied set of measures. Second, we sought to explore the three-way interaction of narcissism, SE instability, and gender for aggression, in hopes that SE instability might further distinguish the differential roles of SE and narcissism as correlates of aggression. Specifically, given Bushman and Baumeister’s (1998) views, we expected a narcissism  $\times$  SE instability interaction, such that people with high narcissism and high SE instability would report the most aggression. In addition, we were interested in examining the possible moderating roles of gender for two reasons. First, for simplicity, we sought to run the same models we ran with SE level, only replacing it with narcissism. Second, previous research has shown that the positive relationship between narcissism and physical aggression was stronger for men than women (Webster, 2006).

### Method

*Participants.* Participants were 105 introductory psychology students who received credit for their participation (54 men, 51 women;  $M_{\text{age}} = 20.05$  years,  $SD = 1.18$ ).

*Measures.* SE measures were identical to those of Study 2 with one exception: All 10 of Rosenberg’s (1965) Self-Esteem Scale items were modified to assess state SE, which used a response scale of 1 (*strongly disagree*) to 10 (*strongly agree*). Trait narcissism was measured using the 40-item Narcissistic Personality Inventory (Raskin & Terry, 1988) and scored as the sum of all narcissistic responses.

The complete 29-item version of the AQ was used to measure trait aggression, with participants responding to items using a scale from 1 (*extremely uncharacteristic of me*) to 5 (*extremely characteristic of me*).<sup>3</sup> Self-reported hostile traits were measured using the BDHI. Following Kernis et al.’s (1989) procedures, the BDHI was divided into an Attitude (“Almost every week I see someone I dislike”) and a Motor (“If somebody hits me first, I let them have it”) component, and scored as the sum of all hostile responses.

*Procedure.* Participants completed all measures using an Internet website. Participants first completed the trait SE measures. They then completed the state SE measure a total of eight times over the course of a week. This schedule was taken directly from Kernis et al.’s (1993) procedure of obtaining eight, semi-daily, state SE assessments at 12-hour intervals (i.e., 10 p.m. Monday, 10 a.m. and 10 p.m. Tuesday through Thursday, and 10 a.m. Friday). Compliance with the semi-daily schedule was excellent: The median number of sessions for which participants provided data was 8 of 8 sessions ( $M = 7.47$ ,  $SD = 0.97$ , minimum = 4 sessions). Following the final session, participants completed trait measures of hostility (BDHI) and aggression (AQ).

### Results

*Preliminary analyses.* First, narcissism was positively correlated with SE level,  $r(103) = .58, p < .01$ , but not SE instability,  $r(103) = -.12, p = .22$ . These results were consistent with recent work by Zeigler-Hill (2006), but contrast with those of Rhodewalt et al. (1998), who found narcissism to be unrelated to SE level, but positively related to SE instability. We next tested Bushman and Baumeister's (1998) assumption that narcissism is related to high, unstable SE. When narcissism scores were regressed onto SE level, SE instability, and their interaction, the interaction was non-significant, but in the direction opposite of what Bushman and Baumeister would expect,  $\beta = -.12, t(101) = -1.44, p = .15, pr^2 = .02$ . Specifically, although *high* SE level was related to narcissism, it was undifferentiated by whether it was stable ( $M = 20.67$ ) or unstable ( $M = 20.54$ ),  $\beta = -.01, t(101) = -0.08, p = .94, pr^2 = .00$ . In contrast, it was *low* SE level that was more heterogeneous, such that people with unstable SE reported more narcissism ( $M = 11.47$ ) than people with stable SE ( $M = 8.93$ ), but not significantly so  $\beta = .16, t(101) = 1.55, p = .12, pr^2 = .02$ . Thus, high, unstable SE was no more associated with narcissism than high, stable SE, thus calling into question Bushman and Baumeister's (1998) assertion that narcissism reflects a form of high, unstable SE.

The AQA and AQB were positively correlated,  $r(103) = .51, p < .01$ . Likewise, the BDHI Attitude and Motor components were positively correlated,  $r(103) = .54, p < .01$ . Correlations between the AQA and BDHI Attitude, as well as between the AQB and BDHI Motor, demonstrated convergent validity,  $rs(103) = .78$  and  $.80$ , respectively,  $ps < .01$ .

Throughout the remainder of the Study 3 Results section, the regression models were similar of those used in Studies 1 and 2. For the SE level analyses, each of the two AQ or BDHI components was regressed onto participant gender (coded women = -1, men = 1), trait SE level, and temporal SE instability (both mean-centered), and all linear higher-order interactions involving these independent variables. Similarly, for the narcissism analyses, each of the two AQ or BDHI components was regressed onto participant gender (coded women = -1, men = 1), trait narcissism, and temporal SE instability (both mean-centered), and all linear higher-order interactions involving these independent variables.

*Self-esteem and the Aggression Questionnaire.* Analyses of the AQB showed only a gender difference,  $\beta = .43, t(97) = 4.48, p < .01, pr^2 = .17$ , such that men reported more aggressive behavior ( $M = 2.80$ ) than women ( $M = 2.16$ ). All other effects were non-significant ( $ps \geq .10$ ).

Analyses of AQA scores revealed several effects, which are displayed in Table 4; predicted means are shown in Table 3. Replicating previous studies, trait SE level was negatively related to the AQA, and this effect was qualified by a three-way interaction with SE instability and gender.

Among women, the SE level  $\times$  SE instability interaction was marginally significant,  $\beta = -.25, t(97) = -1.80, p = .08, pr^2 = .03$ . Among women with stable SE, SE level was unrelated to the AQA,  $\beta = -.08, t(97) = -0.39, p = .70, pr^2 = .00$ , whereas among women with unstable SE, SE level was significantly negatively related to the AQA,  $\beta = -.43, t(97) = -2.74, p < .01, pr^2 = .07$ .

Among men, SE level was negatively related to the AQA,  $\beta = -.39, t(97) = -2.86, p < .01, pr^2 = .08$ . Although this effect was not significantly qualified by an interaction with SE instability,  $\beta = .21, t(97) = 1.20, p = .23, pr^2 = .01$ , simple

**TABLE 4** Regression Statistics for Study 3: Self-Reports of Attitudinal Aggression (AQA and BDHI Attitude) as a Function of Participant Gender, Self-Esteem Instability, Self-Esteem Level, and Narcissism

Variable	AQA			BDHI Attitude		
	$\beta$	$t$	$pr^2$	$\beta$	$t$	$pr^2$
<b>Model 1: Self-esteem</b>						
Gender of participant	.04	0.41	.00	.05	0.54	.00
Self-esteem level	-.32	-3.06**	.09	-.16	-1.47	.02
Instability of self-esteem	-.08	-0.73	.01	.01	0.12	.00
Self-esteem $\times$ instability	-.02	-0.18	.00	-.15	-1.33	.02
Gender $\times$ self-esteem	-.06	-0.64	.00	-.12	-1.12	.01
Gender $\times$ instability	.13	1.22	.02	.10	0.91	.01
Gender $\times$ self-esteem $\times$ instability	.24	2.05*	.04	.24	2.06*	.04
<b>Model 2: Narcissism</b>						
Gender of participant	-.01	-0.12	.00	.00	0.03	.00
Narcissism level	-.04	-0.33	.00	.04	0.33	.00
Instability of self-esteem	.08	0.70	.00	.18	1.64	.03
Narcissism $\times$ instability	-.23	-2.02*	.04	-.31	-2.76**	.07
Gender $\times$ narcissism	-.01	-0.12	.00	-.04	-0.38	.00
Gender $\times$ instability	.15	1.30	.02	.13	1.14	.01
Gender $\times$ narcissism $\times$ instability	.18	1.54	.02	.12	1.09	.01

Note: AQA = Aggression Questionnaire Attitude; BDHI = Buss–Durkee Hostility Inventory. \* $p < .05$ ; \*\* $p < .01$ .

effects analyses revealed that, among men with stable SE, SE level was negatively related to the AQA,  $\beta = -.53$ ,  $t(97) = -2.76$ ,  $p < .01$ ,  $pr^2 = .07$ , whereas among men with unstable SE, this relationship was non-significant,  $\beta = -.24$ ,  $t(97) = -1.43$ ,  $p = .15$ ,  $pr^2 = .02$ .

*Self-esteem and the Buss–Durkee Hostility Inventory.* Analyses of BDHI Motor produced no significant effects ( $ps > .10$ ). In contrast, the analyses of BDHI Attitude produced a significant gender  $\times$  SE level  $\times$  SE instability interaction. No other effects in this analysis were significant ( $ps > .10$ ). These regression statistics are shown in Table 4; predicted means are shown in Table 3.

Among women, a significant SE level  $\times$  SE instability interaction emerged,  $\beta = -.39$ ,  $t(97) = -2.73$ ,  $p < .01$ ,  $pr^2 = .07$ . Among women with stable SE, SE level had no significant impact on BDHI Attitude,  $\beta = .23$ ,  $t(97) = 1.05$ ,  $p = .30$ ,  $pr^2 = .01$ , whereas among women with unstable SE, SE level was marginally negatively related to BDHI Attitude,  $\beta = -.30$ ,  $t(97) = -1.91$ ,  $p = .06$ ,  $pr^2 = .04$ .

Among men, SE level was significantly and negatively related to BDHI Attitude,  $\beta = -.28$ ,  $t(97) = -2.01$ ,  $p < .05$ ,  $pr^2 = .04$ . Although this effect was not qualified by an interaction with SE instability,  $\beta = .08$ ,  $t(97) = 0.46$ ,  $p = .64$ ,  $pr^2 = .00$ , simple effects revealed that, among men with stable SE, SE level was marginally negatively related to BDHI Attitude,  $\beta = -.33$ ,  $t(97) = -1.70$ ,  $p = .09$ ,  $pr^2 = .03$ , whereas

among men with unstable SE, this relationship was not significant,  $\beta = -.22$ ,  $t(97) = -1.28$ ,  $p = .21$ ,  $pr^2 = .02$ .

*Narcissism and the Aggression Questionnaire.* Analyses of AQB scores showed a gender difference,  $\beta = .29$ ,  $t(97) = 3.07$ ,  $p < .01$ ,  $pr^2 = .09$ , such that men reported more aggressive behavior ( $M = 2.67$ ) than women ( $M = 2.23$ ). Additionally, narcissism was positively related to the AQB,  $\beta = .29$ ,  $t(97) = 3.02$ ,  $p < .01$ ,  $pr^2 = .09$ .

Analyses of AQA scores revealed only a narcissism  $\times$  SE instability interaction, which is displayed in Table 4; predicted means are shown in Table 5. Simple effects tests revealed that, among participants with stable SE, narcissism was positively, but not significantly, related to the AQA,  $\beta = .20$ ,  $t(97) = 1.37$ ,  $p = .17$ ,  $pr^2 = .02$ , whereas among participants with unstable SE, narcissism was negatively, but not significantly, related to the AQA,  $\beta = -.27$ ,  $t(97) = -1.58$ ,  $p = .12$ ,  $pr^2 = .03$ .

*Narcissism and the Buss–Durkee Hostility Inventory.* Analyses of BDHI Motor showed only an effect for narcissism, which was positively related to aggression,  $\beta = .35$ ,  $t(97) = 3.35$ ,  $p < .01$ ,  $pr^2 = .10$ .

Analyses of BDHI Attitude scores revealed only a narcissism  $\times$  SE interaction, which is displayed in Table 4; predicted means are shown in Table 5. Simple effects tests revealed that, among participants with stable SE, narcissism was significantly, positively related to BDHI Attitude,  $\beta = .35$ ,  $t(97) = 2.46$ ,  $p = .02$ ,  $pr^2 = .06$ , whereas among participants with unstable SE, narcissism was marginally, negatively related to BDHI Attitude,  $\beta = -.28$ ,  $t(97) = -1.68$ ,  $p < .10$ ,  $pr^2 = .03$ .

### Discussion

Contrary to Bushman and Baumeister's (1998) theorizing, our analyses revealed that people who reported high, unstable SE were not any more narcissistic than those who reported high, stable SE. If anything, low SE level was more heterogeneous in terms of SE instability as an indicator of narcissism. This result spurs questions about whether narcissists harbor a particularly fragile or volatile sense of high self-regard.

The predicted SE level  $\times$  SE instability  $\times$  gender interaction was significant for both the AQA and the BDHI Attitude component. The pattern of simple effects, however, was less clear: Although men with stable SE and women with unstable SE exhibited significant negative relationships between SE level and the AQA, these

**TABLE 5** Predicted Attitudinal Aggression Means for Study 3, as a Function of Participant Gender, Narcissism, and Self-Esteem Instability

	Predicted AQA scores		Predicted BDHI Attitude scores	
	Narcissism		Narcissism	
	Low	High	Low	High
Stable	2.11	2.38	3.33	5.77
Unstable	2.54	2.17	6.81	4.86

*Note:* SE = Self-esteem; AQA = Aggression Questionnaire Attitude; BDHI = Buss–Durkee Hostility Inventory. The words “High” and “Unstable,” and “Low” and “Stable” denote scores at 1 SD above and below the mean (respectively) on narcissism or SE instability.

relationships were only marginally significant for the BDHI Attitude component. Moreover, in terms of our predicted spreading interactions, the pattern of means observed among men was more consistent with Studies 1 and 2 than it was among women: Among men, either low SE or high SE instability was again related to increased attitudinal aggression, whereas among women, conjointly possessing both low SE and higher SE instability produced only the second-highest AQ and BDHI Attitude scores. Despite this minor discrepancy, these results were largely consistent with our suggestion that higher SE levels may serve to buffer aggressive responses, leaving people with lower SE too little SE to buffer against day-to-day threats, resulting in an increase in aggressive feelings.

For attitudinal aggression, the interaction between narcissism and SE instability was qualitatively different than the interaction between SE level and SE instability, in that the former was clearly not moderated by gender. Perhaps more importantly, the narcissism  $\times$  SE level interaction was in a direction opposite to what might be predicted given Bushman and Baumeister's (1998) views on narcissism and aggression: Instead of people with *high* narcissism and unstable SE reporting the most attitudinal aggression, it was people with *low* narcissism and unstable SE that reported the most attitudinal aggression, followed by those with high narcissism and stable SE. In fact, unstable narcissists reported only an average amount of attitudinal aggression. Although our analyses of a narcissism  $\times$  SE instability interaction were largely exploratory, they provided some valuable insights. First, since none of the narcissism effects were qualified by a gender difference, it stands to reason the narcissism is a less gender-differentiated construct than SE. Second, the interactions that were obtained were of the crossover variety, suggesting that SE instability may be a key moderator to understanding the complex relationship between narcissism and aggressive attitudes.

### Aggregate Analyses

A lingering concern of the present studies was that effects of interest (i.e., the SE level  $\times$  SE instability interactions within each gender and the simple, negative SE – AQA relationships among men with stable SE and women with unstable SE) were not consistently statistically significant across all three studies. To help clarify our results and provide support for our explanation of these inconsistencies (i.e., power differences among the three samples), we re-ran the same regression models using an aggregate data set.

#### *Method*

To quantitatively summarize the AQA and AQB findings across Studies 1, 2, and 3, we aggregated the data ( $N = 294$ : 122 men, 172 women) and gave them a common metric by standardizing the measures of SE level, SE instability, the AQA, and the AQB within each study. As in previous studies, AQA or AQB scores were regressed onto all the terms necessary for the participant gender  $\times$  SE level  $\times$  SE instability interaction.

#### *Results*

The AQA and AQB were positively correlated,  $r(292) = .42, p < .01$ , whereas SE level and SE instability were negatively correlated,  $r(292) = -.38, p < .01$ . Men reported marginally higher SE levels ( $M_z = 0.12$ ) than women ( $M_z = -0.09$ ),  $t(292) = 1.77$ ,

$p = .08$ ,  $R^2 = .011$ , whereas women displayed marginally higher SE instability ( $M_z = 0.09$ ) than men ( $M_z = -0.13$ ),  $t(292) = -1.93$ ,  $p = .05$ ,  $R^2 = .013$ .

Analyses of AQB scores revealed that men reported more behavioral aggression ( $M_z = 0.41$ ) than women ( $M_z = -0.30$ ),  $\beta = .35$ ,  $t(286) = 6.08$ ,  $p < .01$ ,  $pr^2 = .11$ . SE level was not significantly related to AQB scores,  $\beta = .08$ ,  $t(286) = 1.20$ ,  $p = .23$ ,  $pr^2 = .01$ . SE instability, however, was positively related to behavioral aggression,  $\beta = .16$ ,  $t(286) = 2.66$ ,  $p < .01$ ,  $pr^2 = .02$ . None of the interactions was significant ( $ps > .20$ ).

Analyses of AQA scores revealed a significant, negative relationship for SE level,  $\beta = -.33$ ,  $t(286) = -5.55$ ,  $p < .01$ ,  $pr^2 = .10$ , and a marginal, positive relationship for SE instability,  $\beta = .11$ ,  $t(286) = 1.89$ ,  $p = .06$ ,  $pr^2 = .01$ . Men reported slightly, but not significantly, more attitudinal aggression ( $M_z = 0.10$ ) than women ( $M_z = -0.07$ ),  $\beta = .08$ ,  $t(286) = 1.45$ ,  $p = .15$ ,  $pr^2 = .01$ . These effects were qualified by the predicted three-way interaction of participant gender  $\times$  SE level  $\times$  SE instability,  $\beta = .21$ ,  $t(286) = 3.43$ ,  $p < .01$ ,  $pr^2 = .04$ . Predicted means appear in Table 3. No other effects were significant ( $ps > .30$ ).

Among women, the SE level  $\times$  SE instability interaction was significant,  $\beta = -.17$ ,  $t(286) = -2.42$ ,  $p = .02$ ,  $pr^2 = .02$ . Among women with stable SE, SE level was negatively, but only marginally, related to the AQA,  $\beta = -.20$ ,  $t(286) = -1.72$ ,  $p = .09$ ,  $pr^2 = .01$ , whereas among women with unstable SE, SE level was significantly negatively related to the AQA,  $\beta = -.47$ ,  $t(286) = -5.87$ ,  $p < .01$ ,  $pr^2 = .11$ .

Among men, the SE level  $\times$  SE instability interaction was significant,  $\beta = .24$ ,  $t(286) = 2.48$ ,  $p = .01$ ,  $pr^2 = .02$ . Simple effects analyses revealed that, among men with stable SE, SE level was significantly negatively related to the AQA,  $\beta = -.51$ ,  $t(286) = -4.18$ ,  $p < .01$ ,  $pr^2 = .06$ , whereas among men with unstable SE, no such relationship was evident,  $\beta = -.14$ ,  $t(286) = -1.26$ ,  $p = .21$ ,  $pr^2 = .01$ .

Further simple effects analyses were conducted to test whether each point estimate differed significantly from zero (i.e., the mean AQA  $z$ -score). Consistent with our predictions, results indicated that women with low, unstable SE reported the *most* attitudinal aggression, whereas men with high, stable SE reported the *least* (Table 3).

### Discussion

The results of aggregate analyses were clear and conclusive. Behavioral aggression was positively related to SE instability, but not SE level. Attitudinal aggression was associated with the three-way interaction of SE level, SE instability, and gender. Simple effects tests showed both a significant SE level  $\times$  SE instability interaction within both men and women, and the predicted, simple, negative relationship between SE level and aggressive attitudes for men with stable SE and women with unstable SE.

### General Discussion

On average across the three studies, women with unstable SE and men with stable SE showed a negative relationship between SE level and self-reports of attitudinal aggression. Consistent with previous research, SE level was negatively related to attitudinal aggression (Donnellan et al., 2005; Webster, 2006). Replicating Kernis et al. (1989), SE instability was positively related to self-reports of behavioral aggression on average across the three studies. In addition to using a total sample size more than 6.5 times that of Kernis et al. (1989), the present research improves

upon their methods by using an Internet website to validate the punctuality of participants' daily responses. In contrast to Kernis et al. (1989), no simple interactions between SE level and SE instability were detected. Instead, they were consistently moderated by gender, such that stable men and unstable women showed a negative association between SE level and attitudinal aggression. It is also noteworthy that women exhibited more SE instability on average than men: Controlling for gender differences in SE instability may be just as important as controlling for gender differences in SE level and aggression (cf. Webster, 2006).

Although the results of the aggregate analyses did not conform precisely to our expectations of within-gender SE level  $\times$  SE instability spreading interactions, the overall pattern was nonetheless supportive: Among men, whose threshold for aggression is arguably lower than women's, possessing either low SE level or high SE instability was associated with reporting above-average attitudinal aggression. In contrast, among women, whose threshold for aggression is arguably higher than men's, only the combination of possessing both low SE level and high SE instability was associated with reporting significantly above-average attitudinal aggression. In other words, for men, low SE and unstable SE were *sufficient* for aggression, whereas for women, low SE and unstable SE were *necessary* for aggression. From this viewpoint, low SE level and high SE instability can be seen as potential risk factors for increased aggression that can be differentiated on the basis of gender differences in thresholds for aggression. Thus, accounting for the moderating role of gender may be crucial to understanding the dynamic relationships among SE level, SE instability, and aggression.

In Study 3, exploratory analyses revealed that narcissism interacted with SE instability in a manner different from SE level. Specifically, there was a tendency for narcissism to be positively related to aggressive attitudes among people with stable SE, but also a tendency for narcissism to be negatively related to aggressive attitudes among people with unstable SE. The positive narcissism–aggression relationship among people with stable SE may be due to the fact that narcissists with stable SE are not successful in temporarily lowering their feelings of self-worth in the face of threat, choosing instead to harbor aggressive attitudes. To some extent, this dovetails well with Bushman and Baumeister's (1998) account of a strong motivational aspect to narcissism, in that narcissists are constantly competing for (self-perceived) superiority, and those with particularly stable self-views are likely to be the most stubborn in this regard. In contrast, the negative narcissism-aggression relationship among people with unstable SE may be due to the fact that narcissists with unstable SE *are* successful in temporarily lowering their feelings of self-worth in the face of threat, thereby averting highly aggressive attitudes. We should caution, however, that these narcissism analyses were merely exploratory. Given that this is the first study (of which we are aware) to examine narcissism and aggression in conjunction with temporal SE instability, further research will be necessary before any concrete conclusions can be drawn.

### *Limitations and Implications*

One finding we did not fully anticipate was the extent to which attitudinal and behavioral aggression were differentially associated with the effects of SE level, SE instability, narcissism, and gender. In the present studies, attitudinal aggression largely consisted of reports of *intrapersonal*, *internalized* aggression (i.e., anger and hostility), whereas behavioral aggression largely consisted of reports of



*interpersonal, externalized* aggression (i.e., acting verbally or physically aggressively toward an unspecified other). For behavioral aggression, the relationship was simple: High SE instability or being male was related to increased physical and verbal aggression. In contrast, for attitudinal aggression, the relationship was dynamic: SE level, SE instability, and gender interacted in association with anger and hostility.

One possible reason for this attitude–behavior discrepancy may have been the gender difference in the aggression measures themselves. The gender difference in behavioral aggression may have been so strong that the interactive effects of SE level and SE instability had little residual variance left to explain. For attitudinal aggression, there was no significant gender difference: Women were as likely as men to report feeling angry and hostile. Thus, obtaining an outcome measure that both men and women used in similar ways may have allowed the SE measures to emerge in the multiple regressions, since they were not washed out by a strong gender effect. Another possibility is that men and women use aggression in different ways. Developmental research by Crick and Grotpeter (1995) has shown that, while boys tend to show more *overt* (i.e., physical or verbal) aggression than girls, girls tend to show more *relational* aggression (i.e., damaging peer relationships via manipulation, social exclusion, vicious rumor, etc.) than boys. The self-report measures used in the present studies do not adequately capture this developmental gender difference between overt and relational aggression. Newer measure of *displaced* aggression may help to illuminate this distinction (cf. Denson, Pedersen, & Miller, 2006).

A second limitation is that the present research may not generalize to laboratory measures of behavioral aggression, in which a threat to the self is experimentally manipulated. For instance, correlational research has typically found a negative relationship between SE level and aggression (Donnellan et al., 2005; Webster, 2006) as well as criminal behavior (Trzesniewski et al., 2006), whereas experimental research has typically found SE level to be unrelated (Bushman & Baumeister, 1998; Kirkpatrick et al., 2002; Twenge & Campbell, 2003), but occasionally negatively related (Webster & Kirkpatrick, 2006), to behavioral aggression.

Laboratory aggression experiments differ in a number of ways from correlational studies. Most notably, laboratory experiments often involve actual (or supposed) dyadic interactions where a participant is given the opportunity to aggress against a confederate or another participant, usually after randomly receiving criticism or praise from the other person. This adds an inherently social element to the mix that might be otherwise lacking in a correlational survey study. With this social element, other processes (e.g., motivational and affective systems) may become activated that would typically not during a paper-and-pencil or online questionnaire. Thus, we remain unsure about the extent to which our findings would necessarily generalize to a laboratory aggression experiment.

A third limitation of the present research is the generality of how SE and, by extension, SE instability were defined. Leary, Tambor, Terdal, and Downs (1995) have suggested that SE functions as a *sociometer*—an adaptation designed to monitor success in interpersonal relations and motivate corrective action when necessary. Drawing on the sociometer model, Kirkpatrick and Ellis (2001; see also Hill & Buss, in press) have advocated a domain-specific approach to SE, such that different adaptive problems (e.g., mate value, social inclusion, social dominance) require multiple, specific sociometers to monitor functionally distinct domains such as mateships and coalitions (cf. Crocker & Luhtanen, 1990; Luhtanen & Crocker, 1992). Because different adaptive problems require different adaptive solutions, Kirkpatrick and Ellis (2001) have argued that a single, general, all-purpose sociometer would not be

diagnostic enough to be functionally adaptive. Consequently, they have suggested that the construct of global SE is simply too broad a measure to be adaptively practical. For example, Kirkpatrick et al. (2002) found a “cooperative” domain of SE (social inclusion) and a “competitive” domain of SE (superiority) to be differentially related to behavioral aggression. Moreover, if global SE represents a combination of several specific domains of SE, then it may also mean different things to different people who are addressing different adaptive concerns, such as men focusing on resource acquisition or women focusing on physical attractiveness (Hill & Buss, in press).

The nature of SE instability is also tentative. Although it tends to be modestly and inversely related to SE level, SE instability appears to represent a distinct dimension of the self (cf. Neiss et al., 2006). Nevertheless, SE instability may be a specific measure (an *s* factor) of a more general individual difference in emotional reactivity or lability (a *g* factor). Such a possibility is suggested by Gable and Nezlek (1998), who found that SE instability was part of a more general instability factor that included the instability of various other constructs such as perceived control over events and anxiety. Additionally, a clear empirical distinction between what constitutes SE *instability* as opposed to SE *lability* (which has been defined as “daily *event-related* variability is self-esteem,” Butler, Hokanson, & Flynn, 1994, p. 166, emphasis added), has yet to be made in the extant literature. In the present studies, we did not address whether state SE covaried over time with negative or positive daily events (cf. Greenier et al., 1999). Moreover, Nezlek and Plesko (2001) caution that SE instability may not always reflect reactivity to day-to-day events. Future research should address some of these fundamental issues by decomposing global SE into its domain-specific components and by assessing SE instability jointly with the instability of other daily measures in reaction to daily events.

### Conclusions

The present research is the first of which we are aware to show that gender plays a key role in moderating the SE level  $\times$  SE instability interaction in association with attitudinal aggression. The findings are consistent with the possibility that higher SE levels may serve to buffer aggressive responses, and that men and women may possess different thresholds for aggression, depending on their SE level and SE instability. Specifically, the results suggest that, among men, either low SE level or high SE instability is a risk factor for increased attitudinal aggression, whereas among women, the combination of both low SE level and high SE instability is a risk factor for the same. Although the present research certainly does not resolve the SE–aggression debate, we hope it will encourage researchers to consider including moderating variables such as gender and SE instability in their future investigations.

### Notes

1. Although this pattern of results may appear to contradict Kernis et al.’s (1989) own prediction that people possessing high, unstable SE would report the most anger, it does not; those with high, unstable SE *did* report the highest Novaco Anger Inventory scores, but what was driving the interaction was those with high, stable SE, who reported by far the lowest anger scores.
2. In each study, participants also completed items from Rosenberg’s (1965) Stability of Self Scale (reverse scored to reflect SE *instability*). The temporal measure of SE

instability showed some convergent validity with this measure in each study ( $r_s = .45$ ,  $.41$ , and  $.41$ , respectively,  $ps < .01$ ). Replicating Kernis et al. (1993), temporal SE instability was inversely correlated with SE level in each study ( $r_s = -.35$ ,  $-.46$ , and  $-.33$ , respectively,  $ps < .01$ ).

3. The 12- and 29-item versions of the AQ were highly correlated,  $r(103) = .97$ ,  $p < .01$ .

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